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Abstract

Information systems (IS) researchers have examined multiple approaches to project management, and for most approaches, a number of critical success factors have been identified. These factors can be used by practicing project managers to improve the success of IS projects. Unfortunately, IS project management literature largely ignores a large class of practicing managers. These individuals manage programs, or collections of individual IS projects. To address this shortcoming, this paper describes an ongoing research project designed to identify complexities that are associated with managing multiple projects simultaneously. We present a theoretical model of program success based on extensions to existing project success models. Further, we describe the research method for an empirical examination of the model with the results to be presented at the conference. This research-in-progress will provide theoretical and practical insights into the comparative differences between IS project management and IS program management.

Keywords: Program management, project management, Delphi study

Introduction

Information technology project management has been widely studied in fields such as software engineering and IS (Abdel-Hamid, 1999; Keil et al., 2000; Smith et al., 2001). In contrast, program management, in which a program is defined as a collection of interrelated projects, has not been examined in detail in IS (Ryan, 1999; Allnoch, 1998). As a first step toward providing more theoretical and practical knowledge on program management, this paper develops a model of program management by combining and extending existing models of project management. In addition, a description of an ongoing empirical examination of the program management model is provided.

Theory

Multiple views of successful project management have been defined in IS literature (e.g., Ramamoorthy et al., 1988; Yourdon, 1988; Bryson and Bromiley, 1993; Barki and Hartwick, 2001); however, two dominant theoretical perspectives have recently emerged: the risk approach (Schmidt et al., 2001) and the coordination approach (Andres and Zmud, 2002). The risk approach emphasizes the identification of project risks and the subsequent fit of risk exposure with risk management techniques. The coordination approach emphasizes the use of an appropriate team and task coordination strategy. The following sections provide a brief overview of each of these approaches.

The Risk View of Project Management

IS research has focused extensively on identifying and addressing project risks. The underlying assumption of this line of research is that an appropriate identification of project risks will provide the project manager with information that is needed to select an

appropriate risk management approach. For example, Schmidt et al. (2001) developed a list of fourteen groups of project risk factors using an international Delphi study. In a related study, Barki et al. (2001) developed a model of software risk project management. They present a project success model that emphasizes the fit of risk exposure with risk management and summarize prior studies by noting that "a software project's Risk Management Profile needs to be adapted to its degree of Risk Exposure" (Barki et al., 2001).

The Coordination View of Project Management

Andres and Zmud (2002) present a research model arguing that three variables impact a software team's productivity and related project's success. These variables are task interdependence, coordination strategy, and goal conflict. Task interdependence measures the extent to which a task requires the exchange of information and the extent to which actions taken in one unit impact the actions of another unit. Andres and Zmud note that coordination strategies vary across the dimensions of formality, cooperativeness, and centralization (McCann and Galbraith, 1981). Goal conflict occurs when group members insist on pursuing goals that are incompatible with the remainder of the group or withdraw their commitment because they believe their own goals will not be obtained. Specifically, "project coordination strategies must exhibit communication mechanisms and decision-making structures that 'match' or 'fit' the task and social context associated with specific work units and project phases" (Andres and Zmud, 2002).

Programs Versus Projects

A key question arises in this analysis: what is the difference between a project and a program? The following sections provide a brief review of practitioner views of the question, an illustrative example to highlight the differences, and a proposed model of program success based on these differences.

The Practitioner View

Various sectors of industry have a long history of using the program approach to managing multiple projects. For example, in the defense industry, contractors undertake large-scale product development such as military aircraft by establishing a series of programs (Springer, 2001). Construction companies routinely use programs to coordinate activities and spread risk between the prime contractor and a series of sub-contractors. Other sectors such as the federal government, healthcare, and education routinely use programs in a similar fashion.

The IS function does not appear to be in agreement about the definition of the term "program." Some IS authors use the words "project" and "program" interchangeably and make no distinction between the two (Archibald, 1992, p. 24). Other authors assert that there are differences. Archibald defines a program as "a long-term undertaking which is usually made up of more than one project…" and a project as "a complex effort, usually less than three years in duration, made up of interrelated tasks, performed by various organizations with a well-defined objective, schedule, and budget" (Archibald, 1992, p. 24). Archibald also notes that "multiproject management" creates additional pressures for integration that may result in single managers maximizing their project's productivity to the detriment of other projects and the organization as a whole (Archibald, 1992, p. 136).

Murray-Webster and Thiry (2000) cite the European Central Computer and Telecommunications Agency definition of program management as the "coordinated management of a portfolio of projects that change organizations to achieve benefits that are of strategic importance." The authors note that emergent or unplanned change is not conducive to project management. They contend that emergent change must be addressed in a strategic context via a program. The authors argue that "much time, monies, and energy are lost in coordination and interface between competing projects if there is not an overarching program to integrate the organization's strategy and its effective delivery" (Murray-Webster, 2000).

An Illustrative Example

A project typically has one primary objective such as the enhancement, upgrade, or installation of a single piece of software. A single manager and multiple leaders lead it with a total staffing level typically below twenty-five to fifty. A project is usually restricted to one hardware platform, one database, and one operating system. For example, a sample project would be the

installation of an accounts payable module. The project would include selection and purchase of a satisfactory package, data conversion from an existing system, and the development of interfaces to multiple modules.

A program typically has multiple simultaneous projects that might entail competing objectives. A program's objective may be the installation of new systems or comprehensive maintenance of existing systems, such as the Year 2000 conversion. A single program manager heads the program and numerous project managers and leaders run the encompassed projects with a total staffing level often in the hundreds. The program can include multiple hardware platforms, databases, and operating systems. For example, a sample program would be the merger of two large retail chains combining staffs, physical locations, and technologies. The program would consist of the simultaneous installation of warehouse, distribution, point-of-sale, merchandising, accounting, and human resource information systems. Each major application project consists of a single project manager and multiple project teams. The numerous application interfaces requires coordination of project delivery timetables and significant amounts of between-function testing.

A Model of Program Success

Risk models of project success and coordination models of project success provide meaningful direction to the management of a given technology project. However, a single risk or coordination model does not adequately address the inherent complexity of a program. In other words, a program's risk and coordination complexity is more than an additive summation of each of the included projects. For example, in a program, there is a separate measurable element of risk and coordination that requires more strategic direction than an individual project alone. To illustrate, Figure 1 below presents a proposed conceptual model for the relationships between projects and programs. The Barki et al. (2001) risk model and the Andres and Zmud (2002) coordination model are used as the bases for this model. It is important to note that a program essentially becomes a project of many projects. As a separate entity, a program is thus susceptible to coordination and risk dynamics similar to those of the included projects. In summary, there are two fundamental premises of this model. First, program complexities are more than just an additive summation of the individual risk and coordination elements of the projects that are components of the program. Second, project difficulty tends to be more tactical (day-to-day issue resolution) and less strategic (longer-range goal and milestone setting), and program difficulty tends to be less tactical and more strategic.

Method

To determine the extent to which project managers and program managers agree on the importance of the success factors in the theoretical model, a three round Delphi study will be conducted. A group of twenty program managers from a large consulting firm will participate in addition to twenty project managers from the same firm. In the first round, the program managers will be asked to complete an open-ended questionnaire designed to elicit their views of the unique characteristics of programs. Key issues will be identified and compared to the findings of Barki et al. (2001) and Andres and Zmud (2002). In the second stage, project and program managers will be asked to modify their individual list of key issues in the typical Delphi manner. A third stage will be completed in an attempt to produce as close to a consensus as is possible. At completion of the third round, the lists will be compared using non-parametric methods to determine if the arrangement of the program manager issues is substantially different from the project manager issues. In addition, comparisons will be made to the original list developed from IS literature. Generalizability may be an issue during this stage of research but should be somewhat mitigated by the fact that the consulting firm has a variety of commercial and public sector clients, and thus each respondent is largely independent of the others.

Summary and Current Status

At present, we are almost ready to begin the first round of the Delphi study. We anticipate completing all three rounds prior to the conference. Consequently, the final results should be ready for presentation at the conference. With the theoretical model presented above and the results of the Delphi study, we should be able to present at the conference a model and empirical examination that will compare and contrast IS project management and IS program management.

The present study will contribute to theory on IS project management by showing (1) whether or not project management critical success factors extend to program management and (2) whether or not current theoretical approaches to project management extend to program management. An equally strong contribution will be made to the practice of IS management. Program management is a large part of IS practice, yet it has not been examined in detail in IS literature. This paper strives to address this shortcoming and accordingly to contribute to research and practice on IS program management.

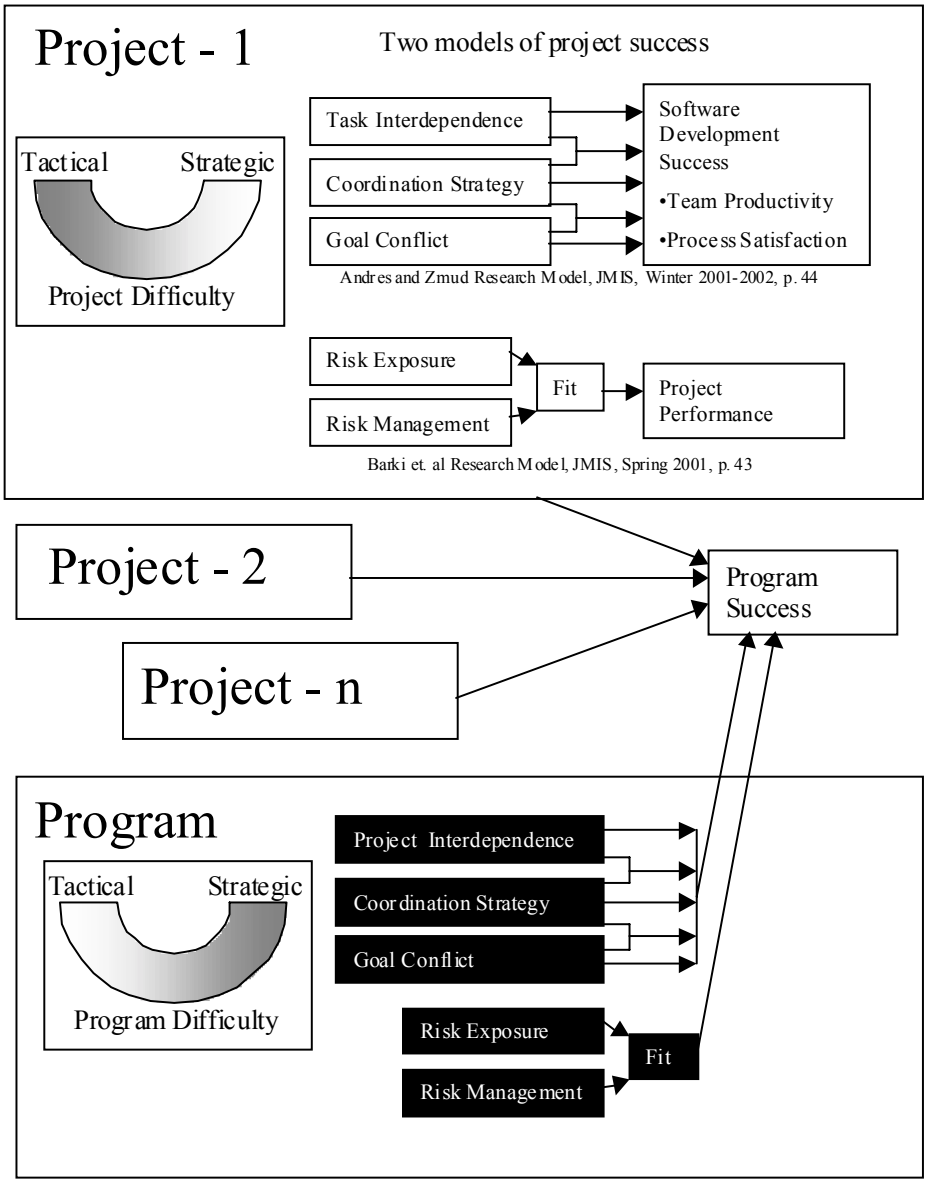

Figure 1. A Model of IS Program Success

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